

Date of Test: March 17 to 23, 2006

FCC ID: S8IWPMS

**TEST REPORT  
Class II Permissive Change****Report Number: 3092673LAX-001Rev.1****Project Number: 3092673****Date of issue: March 21, 2006****Data of revision: August 17, 2006**

Testing performed on the  
**Wireless Physiologic Monitoring System**

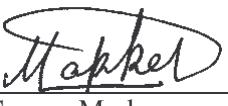
**Model: WPT1000, WTMXXX**

to

**FCC Part 95, subpart H****For  
Edwards Lifesciences, LLC**

Test Performed by:  
Intertek  
92677 La Paz Rd., Suite C  
Laguna Niguel, CA 92677

Test Authorized by:  
Edwards Lifesciences, LLC  
One Edwards Way  
Irvine, CA 92614

Prepared by:   
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Date: 6/28/06

Reviewed by:   
Suresh Kondapalli

Date: 6/29/06

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## 1.0 Introduction

This report is intended to show compliance with the FCC Part 95, Subpart H Rules.

Edwards Lifesciences made a new product, based on the certified device FCC ID: S8IWPMS. The following changes were implemented by Edwards:

Radio and RFID circuitry and driver software is the same on battery powered X units, battery powered M units, monitor powered M units, and AC adaptor powered M units. The following notes apply to all types of Lightning units.

### PCB

- PCB is still same type of 6 layer construction. The layers are used for the same function as before (layer 1 components, layer 2 ground plane, layers 3 and 4 internal signals, layer 5 power plane, layer 6 components). The top and bottom layers no longer have ground plane copper pours around all the components.
- Due to a change in the shape of the printed circuit board, the part placement and trace layout of the circuitry have changed significantly.
- The same shields are used around the microprocessor and radio circuitry .

### 1.4GHz Radio Design

- New radio antenna is a  $\frac{1}{4}$  wave monopole using circuit board ground plane. Previous version used a  $\frac{1}{2}$  wave dipole antenna.
- Radio software control settings (register values) are the same.
- The interval between radio messages has been increased from 23 ms to 52 ms.
- The message length change.
- Some components are change with new layout.

### 134 kHz RFID Design

- The same RFID chip is used. All circuitry around the RFID chip is the same.
- RFID antenna is mounted orthogonal to the PCB rather than horizontal to it.
- RFID software control settings (modes) are the same.

No change in frequency determining and stabilizing circuitry of the device (including clock or data rates), frequency multiplication stages, basic modulator circuit, or maximum power or field strength ratings has been done. Therefore, these changes can be considered as Class II permissive change.

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## 2.0 Summary of Test Results

### FCC Part 95 Subpart H - Wireless Medical Telemetry Service (WMTS)

Part 95H	Part 2	Requirement	Verdict (P/F/NA)	Page/Document
95.1109(a)	2.907 2.1033(c) 2.1041	Authorization by certification under Part 2 Subpart J	P	Application
95.1109(b)	2.925	Label: FCC ID + "Operation of this equipment requires the prior coordination with a frequency coordinator designated by the FCC for the Wireless Medical Telemetry Service."	P	Label
-	2.1046	RF power output	P (calculated)	46
95.1115(a)(1)	-	Field strength in 608-614 MHz band: 200 mV/m at 3m, CISPR QP	NA (no 600 MHz band operation)	-
95.1115(a)(2)	-	Field strength in 1395-1400 and 1427-1429.5 MHz bands: 740 mV/m at 3m, AV and 1 MHz RBW	P	16, 17, 18
-	2.1047	Modulation characteristics	NA (digital modulation)	-
-	2.1051	Spurious emissions at antenna terminals	NA (internal antenna)	-
95.1115(b)(1)	2.1053	Field strength of spurious radiation. Undesired emissions below 960 MHz: 200 $\mu$ V/m at 3m, CISPR QP	P	41
95.1115(b)(2)	2.1053	Field strength of spurious radiation. Undesired emissions above 960 MHz: 500 $\mu$ V/m at 3m, AV and 1 MHz RBW	P	16, 17, 18, 41
95.1115(c)	-	Emission types: any except voice and video Modulation characteristics	P	Note
95.1115(d)(1)	2.1049	Occupied bandwidth Channel use, 1395-1400 and 1427-1429.5 MHz bands: no channels specified.	P	44
95.1115(d)(2)	2.1049	Occupied bandwidth Channel use: 608-614 MHz band: broadband technology, minimum number of 1.5-6 MHz channels per 608-609.5; 609.5-611; 611-612.5; 612.5-614 MHz	NA (no 600 MHz band operation)	-

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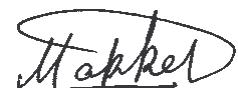
		Occupied bandwidth		
95.1115(e)	2.1055	Frequency stability: remain within band.	P	Note
95.1117(a)(b)	-	Types of communications: all except voice and video, restricted to provision of medical care. Manual or automatic control, or continuous.	P	Note
-	2.1057	Frequency spectrum to be investigated: lowest RF signal generated in the equipment, up to the lower of the 10 <sup>th</sup> harmonic or 40 GHz.	P	16, 17, 18
95.1125	2.1093	RF safety. Portable devices are subject to 1.1307(b) and 2.1093. Statement confirming compliance and technical basis must be submitted.	P	46

Note : The following test results from the original test report (Report Number: 3078050LAX-001Rev.1, issue date: June 28, 2006) are applicable without additional testing.

EMC Department

Date of issue: September 12, 2005

Test Engineer:



Sergey Marker

Reviewing Engineer:



Suresh Kondapalli

Date of Test: March 17 to 23, 2006

**FCC ID: S8IWPMS****3.0 General Description****3.1 Product Description*****EQUIPMENT UNDER TEST***

<i>Type of equipment</i>	Wireless Physiologic Monitoring System	
<i>Type/Model</i>	WPT1000 – Transducer Module (X Unit) WTMXXX – Monitor Module (M Unit)	
<b>Technical Specifications:</b>	Range:	15 feet (4.6m)
	Frequency:	Operating Frequencies: WMDS Bands 1395 – 1400 MHz, 1427 – 1429.5 MHz
	Channels:	Ch.1: 1395.625 MHz Ch.2: 1396.875 MHz Ch.3: 1398.125 MHz Ch.4: 1399.375 MHz Ch.5: 1427.625 MHz Ch.6: 1428.875 MHz
	RFID Reader System:	127 - 142 kHz
	Modulation:	FSK (Frequency Shifted Keyed) OOK (On Off Keyed)
	Operating system:	
	RFID Reader system:	
	Output Power:	
	Operating system:	-5dBm
	RFID Reader System:	150 dB $\mu$ A/m
	Supply voltage, wattage:	
	X Unit:	1.5 VDC AA Alkaline battery
	M Unit:	9 VDC, 25 mA
	AC Adapter:	100 -240 VAC Input 9 VDC, 1.1 A Output
	Operational environment:	Indoors, 15°C to 40°C
	Antenna:	
	Operating System:	Vertical Antenna (permanently attached)
	RFID Reader System:	Coil integrated inside the EUT
<i>Manufacturer</i>	Edwards Lifesciences, LLC One Edwards Way Irvine, CA 92614	

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***Tested by request of***

Mr. Don Parikh  
Phone: (949) 588-7568  
Fax: (949) 588-8871

***Standards:***

FCC Part 95 H (95.1115)  
FCC Part 15 B, C (15.109 / 209)

***Test Report No.*** 3092673LAX-001Rev.1

***FCC ID:*** S8IWPMS

***EUT Description:***

The Wireless Physiological Monitoring System is a wireless device designed to be used in place of standard cable. The system communication operates using frequency bands designed for use by the Wireless Medical Telemetry Service.

The system utilized RFID link process, which operates at 127 - 142 kHz frequency band.

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### **3.2 Related Submittal(s) Grants**

This report is for use with an application for certification of a low power transmitter. One transmitter is included in the application. This specific report details the emission characteristics of transmitter.

### **3.3 Test Methodology**

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003). Radiated emission measurements were performed in 10 m Open Area Test Site. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

### **3.4 Test Facility**

The test facility was a specially designed and constructed Open Area Test Site (OATS). Test site included a metal ground plane constructed of 22-gauge sheet metal. It contained a 2.5 meter diameter turntable for floor standing equipment, and a fiber glass table measuring 1.5 x 1.5 x 0.8 meters for table top equipment. To facilitate testing, also it has heat and air conditioning systems to control environmental test conditions. This test facility and site measurement data have been fully placed on file with the FCC, Industry of Canada and A2LA accredited.

Test Facility: Intertek ETL Semko  
27611 La Paz Road, Suite C  
Laguna Niguel, CA 92677

#### Accreditations:

FCC Registration Number: 90711  
A2LA Certificate Number: 2085-01  
IC Reference Number: IC 3753

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**FCC ID: S8IWPMS****4.0 System Test Configuration****4.1 Justification**

For emission testing, the equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). During testing, all cables were manipulated to produce worst case emissions.

For the measurements, the EUT is attached to a cardboard box (if necessary) and placed on the wooden turntable. If the EUT attaches to peripherals, they are connected and operational (as typical as possible). The EUT is wired to transmit full power.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters.

Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance.

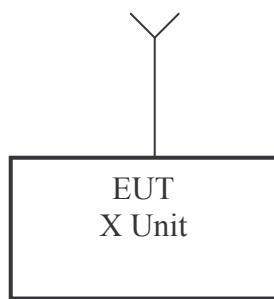
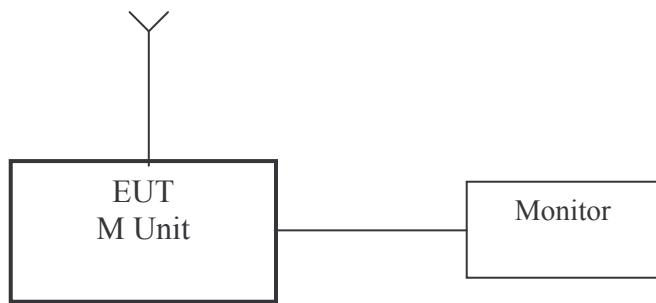
**4.2 EUT Exercising Software**

No software was required to exercise the EUT.

**4.3 System Test Configuration****4.3.1 Support Equipment**

<b>Support Equipment</b>				
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model #</b>	<b>S/N #</b>	<b>FCC ID</b>
Monitor	GE	Dash 4000	N/A	N/A

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**FCC ID: S8IWPMS****4.3.2 Block Diagram of Test Setup**

<b>S:</b>	Shielded	<b>U:</b>	Unshielded	<b>F:</b>	With Ferrite Core
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#### **4.4 Equipment Modification**

None

#### **4.5 Mode(s) of operation**

The X Unit was powered from the battery. This component transmits the transducer signal via radiofrequency to the M unit. The EUT utilizes Frequency Shift Keyed (FSK) modulation in normal operation. During the tests EUT was wired to operate at continuous transmitting mode (CW).

The M Unit was powered from the battery. This component connects to the patient monitor via IBP connection and receives the radiofrequency data transmission from X Unit. The EUT utilizes Frequency Shift Keyed (FSK) modulation in normal operation. During the tests EUT was wired to operate at continuous transmitting mode (CW).

NOTE:

Both units are transceivers utilizing the same transmitters in operation frequency range, and RFID reader system. The difference is only in control circuits.

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**FCC ID: S8IWPMS****5.0 Field Strength of Emission****5.1 Test Description**

Parameter:	FCC 95.1115(a)(2) & (b)(2)
Requirement:	FCC 95.1115(a)(2) & (b)(2)
Fundamental: 1395 – 1400 MHz	Limit 117.4 dB $\mu$ V
Harmonics: above 960 MHz	Limit 54 dB $\mu$ V
Distance:	3 m

**5.1.1 Test Procedure**

For the measurements, the EUT is attached to a cardboard box (if necessary) and placed on the wooden turntable which is 0.8 m above the ground plane on the open test site. If the EUT attaches to peripherals, they are connected and operational (as typical as possible). The EUT is wired to transmit full power in CW mode. Average Factor was calculated and added to the peak emission obtained in CW mode. The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Radiated emission measurements were performed from 30 MHz to the 10<sup>th</sup> harmonic of transmitter frequency. Analyzer resolution is 120 KHz for 30 to 1000 MHz, 1 MHz for >1000 MHz. This test was performed per test procedure specified in ANSI C63.4 (2003).

**5.1.2 Field Strength Calculation**

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with antennas, cables, preamplifiers (if any) and average factors (when specified limits is in average and measurements are made with peak detectors) The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG + AV$$

where FS = Field Strength in dB( $\mu$ V/m)RA = Receiver Amplitude in dB( $\mu$ V)

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB/m

AG = Amplifier Gain in dB

AV = Average Factor in (-dB)

Assume a receiver reading of 52.0 dB( $\mu$ V) is obtained. The antenna factor of 7.4 dB/m, cable factor of 4.6 dB and average factor of -5.1dB are added. The amplifier gain of 27 dB is subtracted, giving a field strength of 32 dB( $\mu$ V/m).

$$RA = 52 \text{ dB}(\mu\text{V}) \quad CF = 1.6 \text{ dB} \quad AV = -5.1 \text{ dB}$$

$$AF = 7.4 \text{ dB/m} \quad AG = 29 \text{ dB} \quad FS = 52 + 7.4 + 4.6 - 27 - 5.1 = 32 \text{ dB}(\mu\text{V/m})$$

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This value in dB( $\mu$ V/m) was converted to its corresponding level in  $\mu$ V/m.

Level in  $\mu$ V/m = Common Antilogarithm  $\{[32 \text{ dB}(\mu\text{V}/\text{m})]/20\} = 39.8 \mu\text{V}/\text{m}$

**Note:** In the following table(s), the level shown on the data table includes the antenna factor, cable factor and preamplifier gain.

### 5.1.3 Calculation of Average Factor.

Average Factor (AV) in dB =  $20 \log (\text{duty cycle})$

The specification for output field strength for frequencies above 1000 MHz according to FCC rules specify measurements with average detectors. The EUT use Frequency Shift Keyed (FSK) modulation in normal operation. During the tests EUT was wired to operate at continuous transmitting mode (CW). For field strength measurements of emission from transmitter, average factor was calculated and added to the peak emission obtained in CW mode and compared to the limit specified for average detector.

The time period over the duty cycle is measured is 55 milliseconds, or the repetition cycle, whichever is a shorter time frame. The worst case (highest percentage on) duty cycle is used for calculation.

The duty cycle is simply the On-time divided by the period:

Time period = 55 ms

Effective period of the cycle =  $1.32 \text{ ms} \times 2 = 2.64 \text{ ms}$

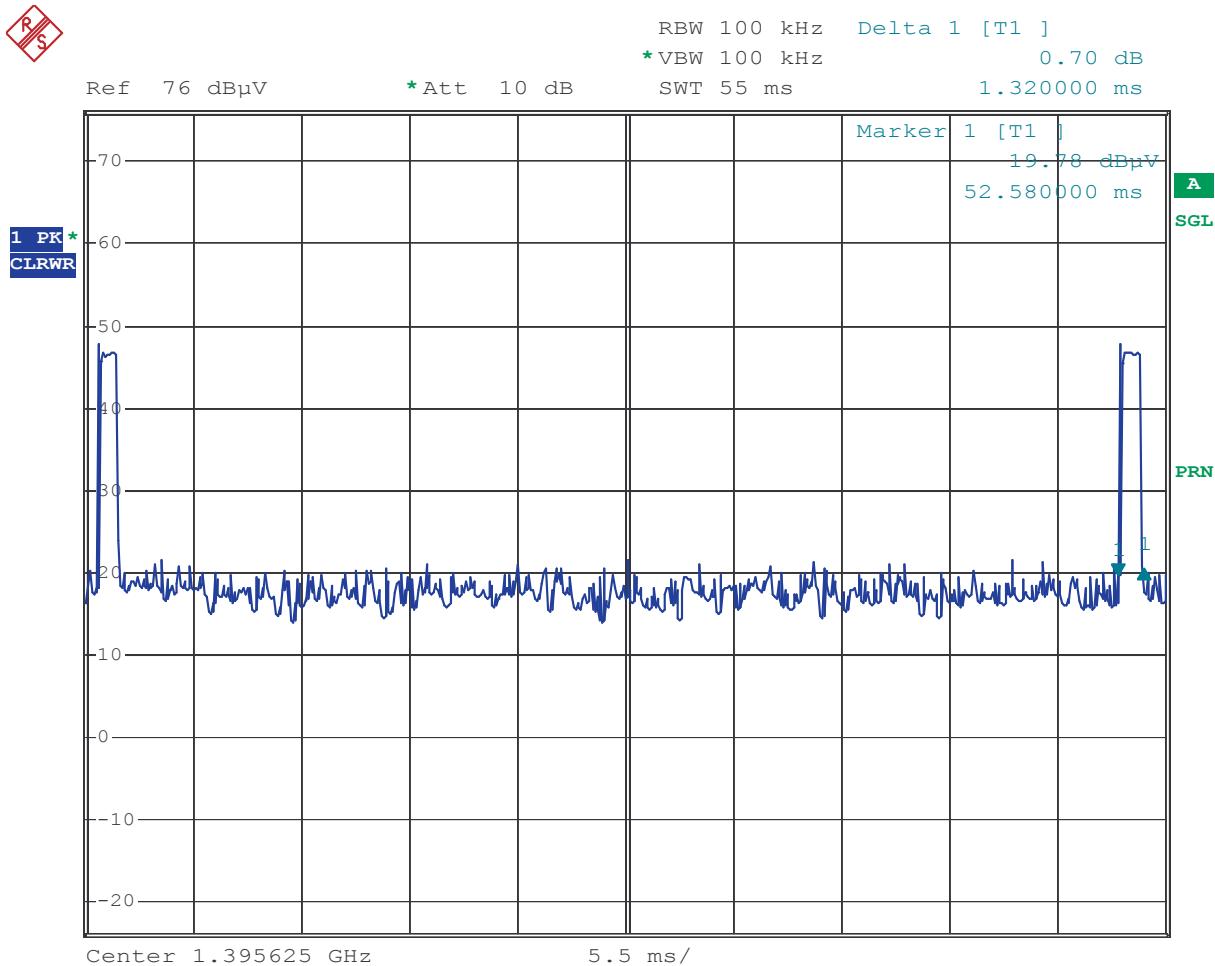
DC =  $2.64 \text{ ms}/55 \text{ ms} = 0.048$

AV =  $20 \log 0.048 = -26.4 \text{ dB}$

Minimum allowed average factor is -20 dB

Plot on the next page shows the transmission timing over 55 ms time frame.

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Comment: Duty cycle  
Date: 23.MAR.2006 22:53:20

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**FCC ID: S8IWPMS****5.1.4 Radiated Emission Data****Standard:** FCC Part 95.1115(a)(2) & (b)(2)

Measurement Uncertainty: 3.92dB

**Company:** Edwards Lifesciences, LLC

Temperature: 24°C

**Job No.** 3092673

Relative Humidity: 49 %

**Model Name:** X Unit**Test Channel:** Channel 1 & 4**Mode:** Transmitting (CW)NOTE:

Both units are transceivers utilizing the same transmitters/receivers in operation frequency range, and RFID reader system. The difference is only in control circuits.

Frequency	Distance	Vertical level	Horizontal level	D.C.F.	Limit	Margin
MHz	m	(dBuV/m)	(dBuV/m)	dB	(dBuV/m)	(dB)
1395.625	3.0	58.4	64.4	0.0	117.4	-53.0
2791.250	3.0	31.1	35.2	0.0	54.0	-18.8
4186.875	3.0	28.1	31.3	0.0	54.0	-22.7
5582.250	3.0	30.7	29.9	0.0	54.0	-23.3
6978.125	3.0	29.4	29.1	0.0	54.0	-24.6
8373.750	3.0	32.7	32.7	0.0	54.0	-21.3
9769.375	3.0	35.4	35.5	0.0	54.0	-18.5
11165.000	1.0	38.7	37.9	9.5	54.0	-24.8
12560.625	1.0	38.1	37.7	9.5	54.0	-25.4
13956.250	1.0	44.5	44.7	9.5	54.0	-18.8
1399.375	3.0	60.0	66.4	0.0	117.4	-51.0
2798.750	3.0	29.4	35.2	0.0	54.0	-18.8
4198.125	3.0	27.7	33.0	0.0	54.0	-21.0
5597.500	3.0	32.2	30.3	0.0	54.0	-21.7
6996.875	3.0	28.9	30.3	0.0	54.0	-23.7
8396.250	3.0	32.0	32.4	0.0	54.0	-21.6
9795.250	3.0	35.9	35.4	0.0	54.0	-18.1
11195.000	1.0	38.0	37.3	9.5	54.0	-25.5
12594.375	1.0	38.7	37.8	9.5	54.0	-24.8
13993.750	1.0	44.7	44.1	9.5	54.0	-18.8

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**FCC ID: S8IWPMS****Model Name:** X Unit**Test Channel:** Channel 5 & 6

Frequency	Distance	Vertical level	Horizontal level	D.C.F.	Limit	Margin
MHz	m	(dBuV/m)	(dBuV/m)	dB	(dBuV/m)	(dB)
1427.625	3.0	59.3	66.2	0.0	117.4	-51.2
2855.250	3.0	26.4	31.9	0.0	54.0	-22.1
4282.875	3.0	30.9	30.2	0.0	54.0	-23.8
5710.500	3.0	31.0	28.4	0.0	54.0	-25.6
7138.125	3.0	30.5	29.6	0.0	54.0	-24.4
8565.750	3.0	31.8	32.2	0.0	54.0	-21.8
9993.375	3.0	35.4	35.6	0.0	54.0	-18.4
11421.000	1.0	36.9	37.5	9.5	54.0	-26.0
12848.625	1.0	37.7	37.7	9.5	54.0	-25.8
14276.250	1.0	44.3	45.1	9.5	54.0	-18.4
1428.875	3.0	58.0	66.3	0.0	117.4	-51.1
2857.750	3.0	25.9	31.6	0.0	54.0	-22.4
4286.625	3.0	32.3	31.0	0.0	54.0	-23.0
5715.500	3.0	30.8	29.3	0.0	54.0	-23.2
7144.375	3.0	31.5	30.0	0.0	54.0	-22.5
8573.250	3.0	32.2	32.9	0.0	54.0	-21.1
10002.250	3.0	35.6	36.3	0.0	54.0	-17.7
11431.000	1.0	38.2	37.6	9.5	54.0	-25.3
12859.875	1.0	38.1	37.4	9.5	54.0	-25.4
14288.750	1.0	45.2	46.1	9.5	54.0	-17.4

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**FCC ID: S8IWPMS****Model Name:** M Unit**Test Channel:** Channel 1 & 5

Frequency	Distance	Vertical level	Horizontal level	D.C.F.	Limit	Margin
MHz	m	(dBuV/m)	(dBuV/m)	dB	(dBuV/m)	(dB)
1395.625	3.0	59.6	69.5	0.0	117.4	-47.9
2791.250	3.0	30.0	36.8	0.0	54.0	-17.2
4186.875	3.0	32.8	30.8	0.0	54.0	-21.2
5582.250	3.0	28.8	26.7	0.0	54.0	-25.2
6978.125	3.0	29.4	28.2	0.0	54.0	-24.6
8373.750	3.0	31.9	32.5	0.0	54.0	-21.5
9769.375	3.0	35.2	35.4	0.0	54.0	-18.6
11165.000	1.0	36.9	37.3	9.5	54.0	-26.2
12560.625	1.0	38.1	38.3	9.5	54.0	-25.2
13956.250	1.0	44.1	44.0	9.5	54.0	-19.4
1427.625	3.0	60.1	70.7	0.0	117.4	-46.7
2855.250	3.0	28.8	33.9	0.0	54.0	-20.1
4282.875	3.0	32.8	32.5	0.0	54.0	-21.2
5710.500	3.0	31.2	29.7	0.0	54.0	-22.8
7138.125	3.0	31.0	29.2	0.0	54.0	-23.0
8565.750	3.0	32.3	32.9	0.0	54.0	-21.7
9993.375	3.0	36.3	36.3	0.0	54.0	-17.7
11421.000	1.0	37.8	37.7	9.5	54.0	-25.7
12848.625	1.0	37.5	37.5	9.5	54.0	-26.0
14276.250	1.0	45.4	44.8	9.5	54.0	-18.7

**Notes:**

- a) The field strength shown in the table (Vertical and Horizontal levels) included Antenna factor, Cable loss, Average factor (-20 dB) and Pre-amplifier Gain (if applicable).
- b) Negative signs (-) in Margin column signify levels below the limits.
- c) For frequencies below 1000 MHz the, above limits are based on quasi-peak limits.  
Analyzer setting: RBW =120 KHz, VBW =300 KHz
- d) For frequencies above 1000 MHz the, above limits are based on average limits.
- e) Analyzer setting: RBW =1 MHz, VBW =1 MHz
- f) All other emissions not reported are below the equipment noise floor which is at least 10 dB below the limits.

Date of Test: March 17 to 23, 2006

**FCC ID: S8IWPMS**

g) D.C.F: Distance Correction Factor.

<b>Test Result</b>	<b>FCC 95.1115 (a)(2):</b> Passed with 53.1 dB margin at 1427.625 MHz. <b>FCC 95.1115 (b)(2):</b> Passed with 17.2 dB margin at 2791.75 MHz.
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Date of Test: March 17 to 23, 2006

**FCC ID: S8IWPMS**

## 5.2 Test Description

Parameter:	FCC 15.109
Requirement:	FCC 15.109
30-88 MHz	40 dB $\mu$ V @ 3 m
88-216 MHz	43.5 dB $\mu$ V @ 3 m
216-960 MHz	46 dB $\mu$ V @ 3 m
Above 960 MHz	54 dB $\mu$ V @ 3 m

### 5.2.1 Test Procedure

See section 5.1.1.

### 5.2.2 Field Strength Calculation

See section 5.1.2.

Date of Test: March 17 to 23, 2006

**FCC ID: S8IWPMS****5.2.3 Radiated Emission Data****Standard:** FCC Part 15.109

Measurement Uncertainty: 3.92dB

**Company:** Edwards Lifesciences, LLC

Temperature: 24°C

**Job No.** 3092673

Relative Humidity: 49 %

**Model Name:** X Unit**Test Channel:** Channel 1**Mode:** Receiving**Distance:** 3 m

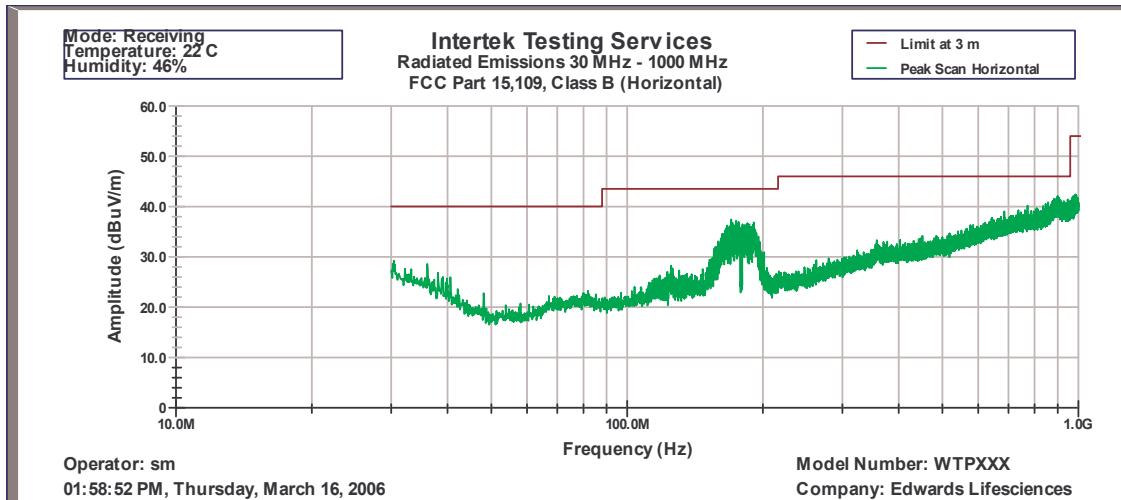
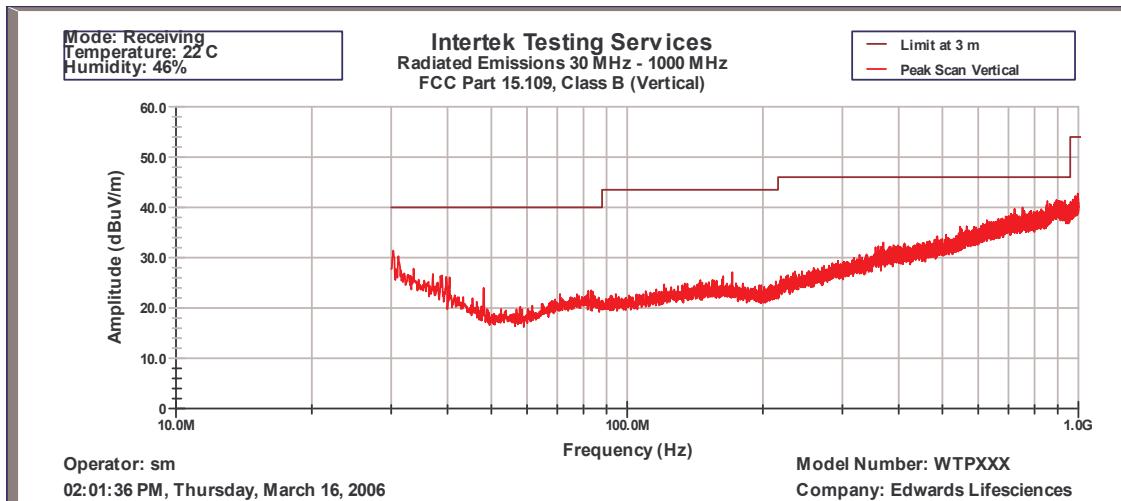
Frequency	Detector	Vertical level	Horizontal level	D.C.F.	Limit	Margin
MHz		(dBuV/m)	(dBuV/m)	dB	(dBuV/m)	(dB)
189.4	Q-peak	18.2	27.2	0	43.5	-16.3
190.5	Q-peak	19.1	29.0	0	43.5	-14.5
195.5	Q-peak	20.3	29.5	0	43.5	-14.0
196.9	Q-peak	21.6	32.0	0	43.5	-11.5
198.1	Q-peak	21.4	31.4	0	43.5	-12.1
204.3	Q-peak	19.7	28.8	0	43.5	-14.7
225.7	Q-peak	20.5	29.2	0	46.0	-16.8

**Notes:**

- a) The field strength shown in the table (Vertical and Horizontal levels) included Antenna factor, Cable loss and Pre-amplifier Gain (if applicable).
- b) All emissions not reported were at least 20 dB below the limits.
- c) Negative signs (-) in Margin column signify levels below the limits.
- d) Analyzer setting:  $RBW \geq 1 \text{ MHz}$ ,  $VBW \geq 1 \text{ MHz}$ , for freq.  $> 1 \text{ GHz}$   
 $RBW \geq 100 \text{ kHz}$ ,  $VBW \geq 100 \text{ kHz}$ , for freq.  $< 1 \text{ GHz}$
- e) D.C.F: Distance Correction Factor

<b>Test Result</b>	<b>Passed with 11.5 dB margin at 196.9MHz.</b>
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Date of Test: March 17 to 23, 2006

**FCC ID: S8IWPMS****Radiated Emission, X Unit, Horizontal Polarization****Radiated Emission, X Unit, Vertical Polarization**

Date of Test: March 17 to 23, 2006

**FCC ID: S8IWPMS****5.2.4 Radiated Emission Data****Standard:** FCC Part 15.109

Measurement Uncertainty: 3.92dB

**Company:** Edwards Lifesciences, LLC

Temperature: 24°C

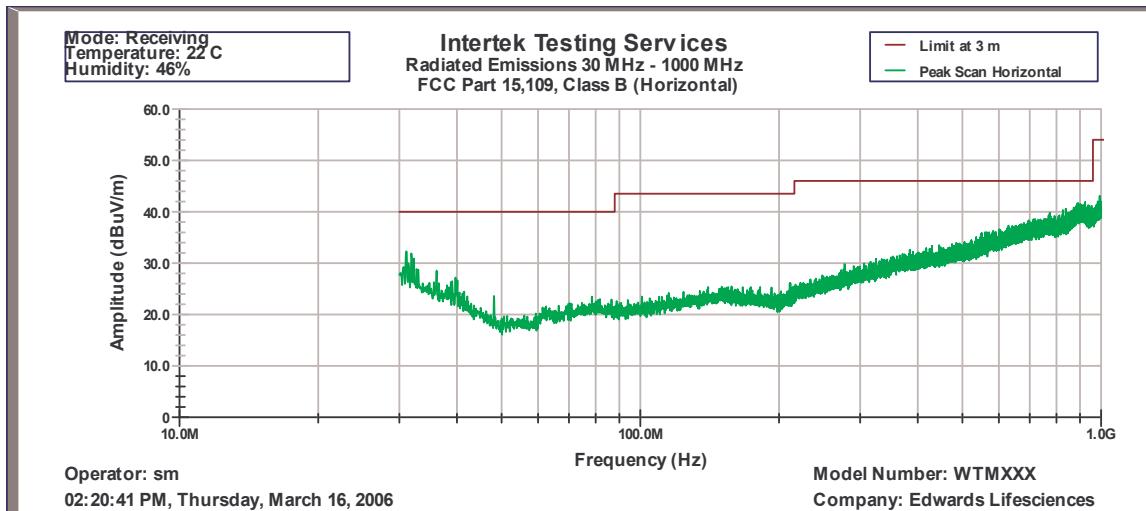
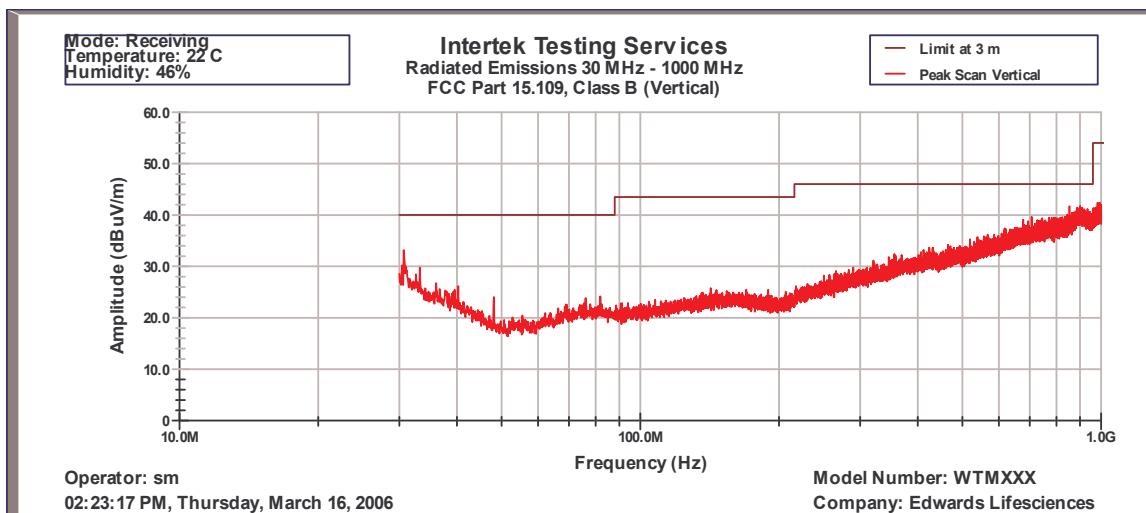
**Job No.** 3092673

Relative Humidity: 49 %

**Model Name:** M Unit**Test Channel:** Channel 1**Mode:** Receiving**Distance:** 3 m**Notes:**

No emissions were found below the noise level of EMI receiver. See next page for peak scans

Date of Test: March 17 to 23, 2006

**FCC ID: S8IWPMS****Radiated Emission, M Unit, Horizontal Polarization****Radiated Emission, M Unit, Vertical Polarization**

Date of Test: March 17 to 23, 2006

**FCC ID: S8IWPMS**

## 6.0 Out of Band Emission

### 6.1 Test Description

Parameter:	FCC 95.1115(b)
Requirement:	FCC 95.1115(b) & (b)(2)
below: 960 MHz	Limit 46 dB $\mu$ V
above: 960 MHz	Limit 54 dB $\mu$ V
Distance:	3 m

### 6.2 Test Procedure

See section 4.1.1.

### 6.3 Test Results

See attached plots.

The following plots show the relative spurious emission level of the X Unit in transmitting mode.

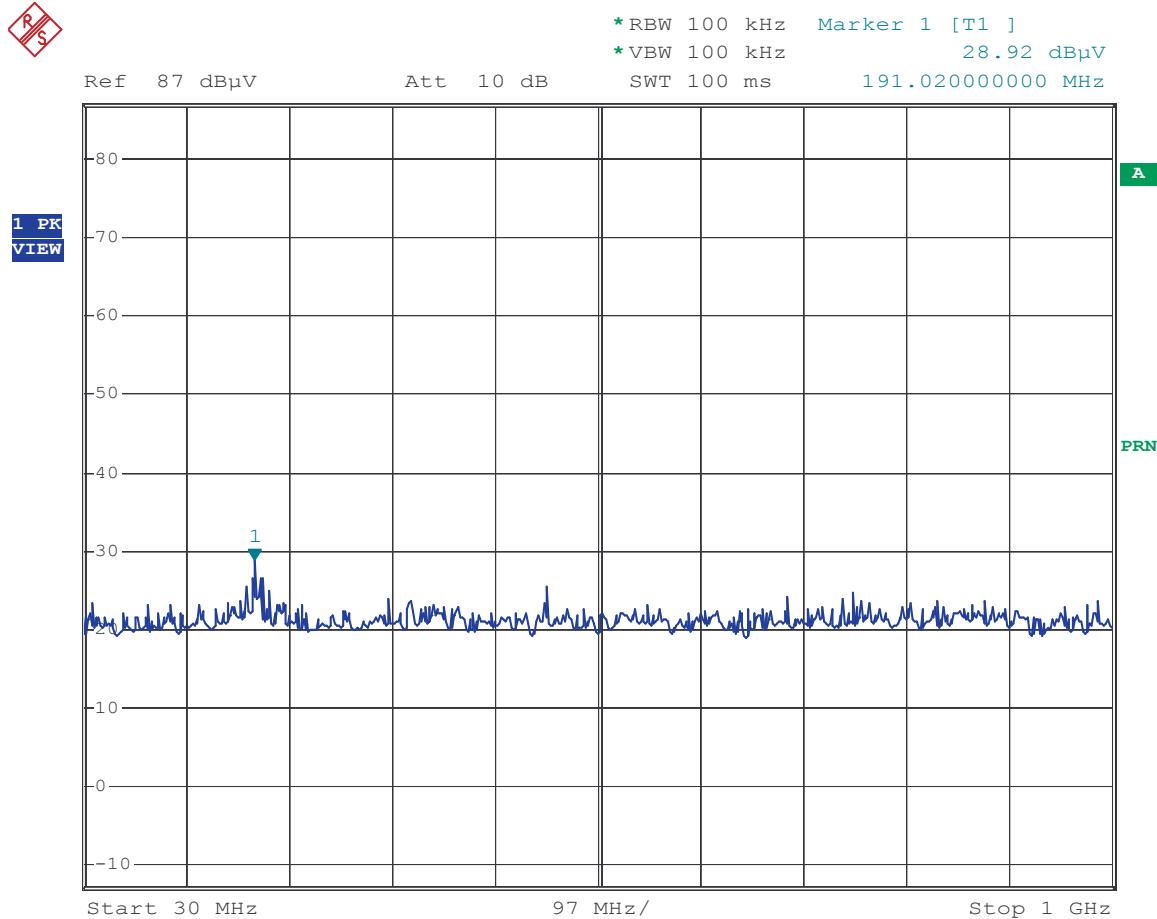
Plot #	Description
5.3.a	Plot shows peak scan emission from 30 to 1000 MHz. Plot shows emissions which verified in section 5.4 for compliance to section 95.1115(b)
5.3.b	Plot shows peak measurements differential between ch.1 fundamental and frequency range from 1000 to 1400 MHz. (58-43.5=14.5 dB $\mu$ V) < 54 dB $\mu$ V
5.3.c	Plot shows peak measurements differential between ch.1 fundamental and lower edge of the frequency band (58-33.0=25 dB $\mu$ V) < 54 dB $\mu$ V
5.3.d	Plot shows peak measurements differential between ch.1 fundamental and upper edge of the frequency band (58-44.0=14 dB $\mu$ V) < 54 dB $\mu$ V
5.3.e	Plot shows peak measurements differential between ch.4 fundamental and lower edge of the frequency band (60-33.0=27 dB $\mu$ V) < 54 dB $\mu$ V
5.3.f	Plot shows peak measurements differential between ch.4 fundamental and upper edge of the frequency band (60-31.4=28.6 dB $\mu$ V) < 54 dB $\mu$ V
5.3.g	Plot shows peak measurements differential between ch.5 fundamental and lower edge of the frequency band (59.8-36.0=23.8 dB $\mu$ V) < 54 dB $\mu$ V
5.3.h	Plot shows peak measurements differential between ch.5 fundamental and upper edge of the frequency band (59.8-35.0=24.8 dB $\mu$ V) < 54 dB $\mu$ V
5.3.i	Plot shows peak measurements differential between ch.6 fundamental and lower edge of the frequency band (59.9-36.0=23.9 dB $\mu$ V) < 54 dB $\mu$ V
5.3.j	Plot shows peak measurements differential between ch.6 fundamental and upper edge of the frequency band (59.9-36.0=23.9 dB $\mu$ V) < 54 dB $\mu$ V
5.3.k	Plot shows peak measurements differential between ch.6 fundamental and frequency range from 1400 to 2000 MHz (59.9-39.3=20.6 dB $\mu$ V) < 54 dB $\mu$ V

Date of Test: March 17 to 23, 2006

**FCC ID: S8IWPMS**

5.3.1	Plot shows spurious emission from 2000 to 4000 MHz, which verified in section 5.4 for compliance to section 95.1115(b)
5.3.m	Plot shows spurious emission from 4000 to 6000 MHz, which verified in section 5.4 for compliance to section 95.1115(b)
5.3.n	Plot shows spurious emission from 6000 to 10000 MHz, which verified in section 5.4 for compliance to section 95.1115(b)

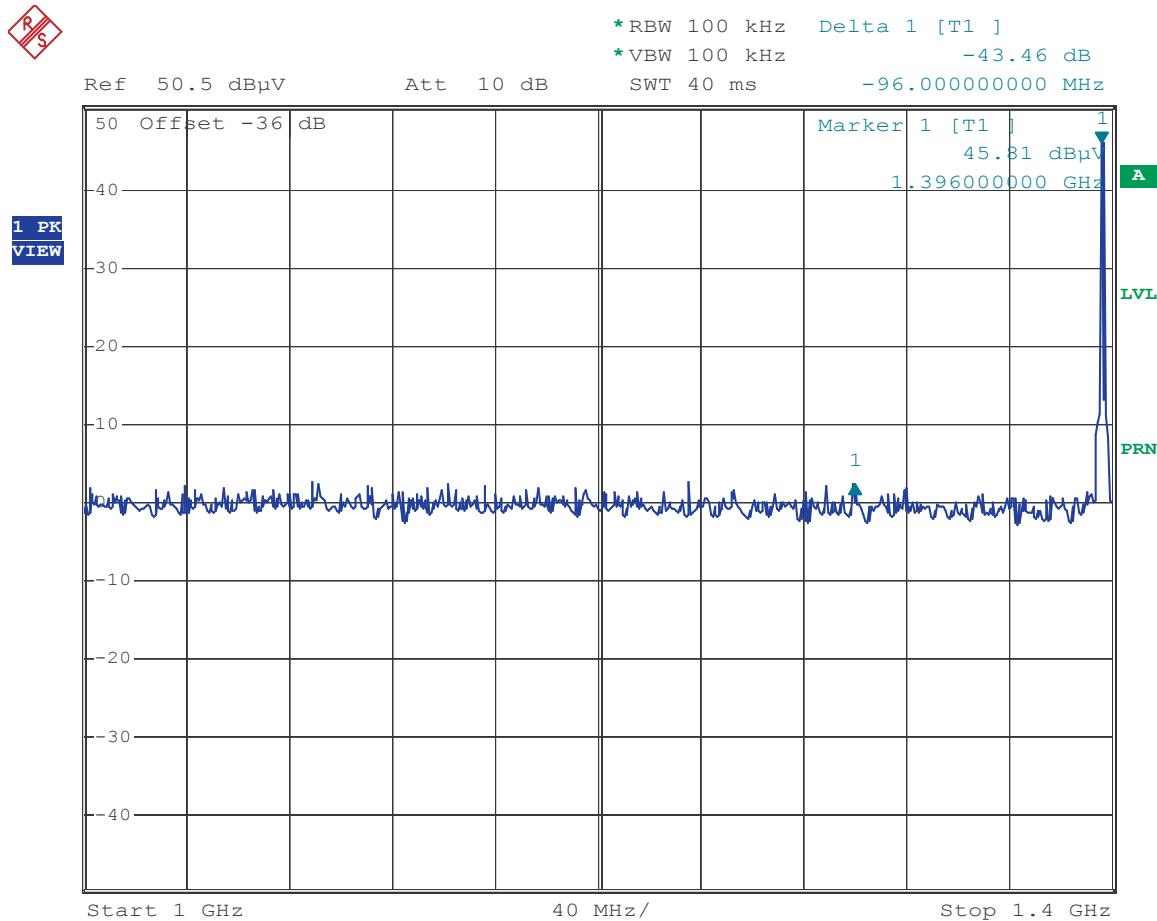
Date of Test: March 17 to 23, 2006

**FCC ID: S8IWPMS**

Comment: Ch1-X-Unit  
Date: 16.MAR.2006 23:43:10

**Plot 5.3.a**

Date of Test: March 17 to 23, 2006

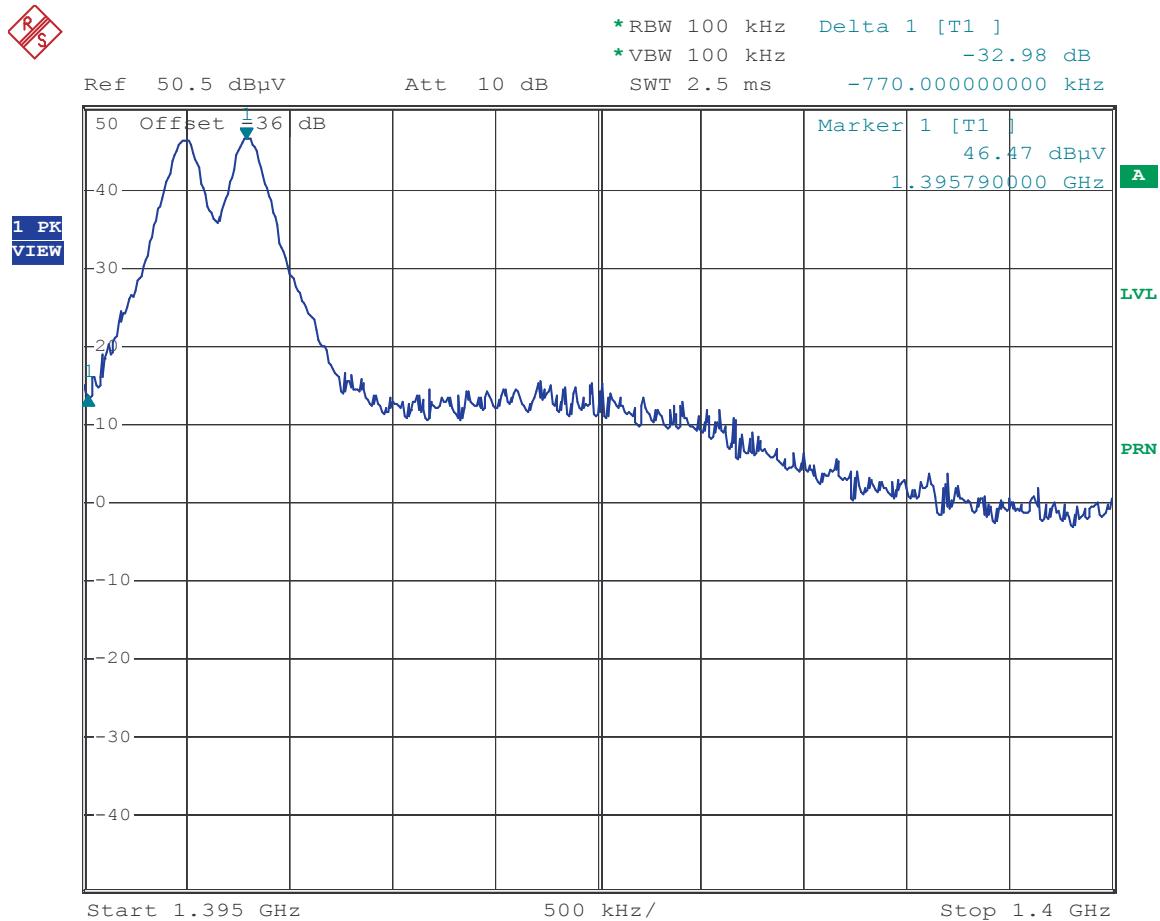
**FCC ID: S8IWPMS**

Comment: Ch1-X-Unit  
Date: 17.MAR.2006 00:01:53

**Plot 5.3.b**

Date of Test: March 17 to 23, 2006

FCC ID: S8IWPMS

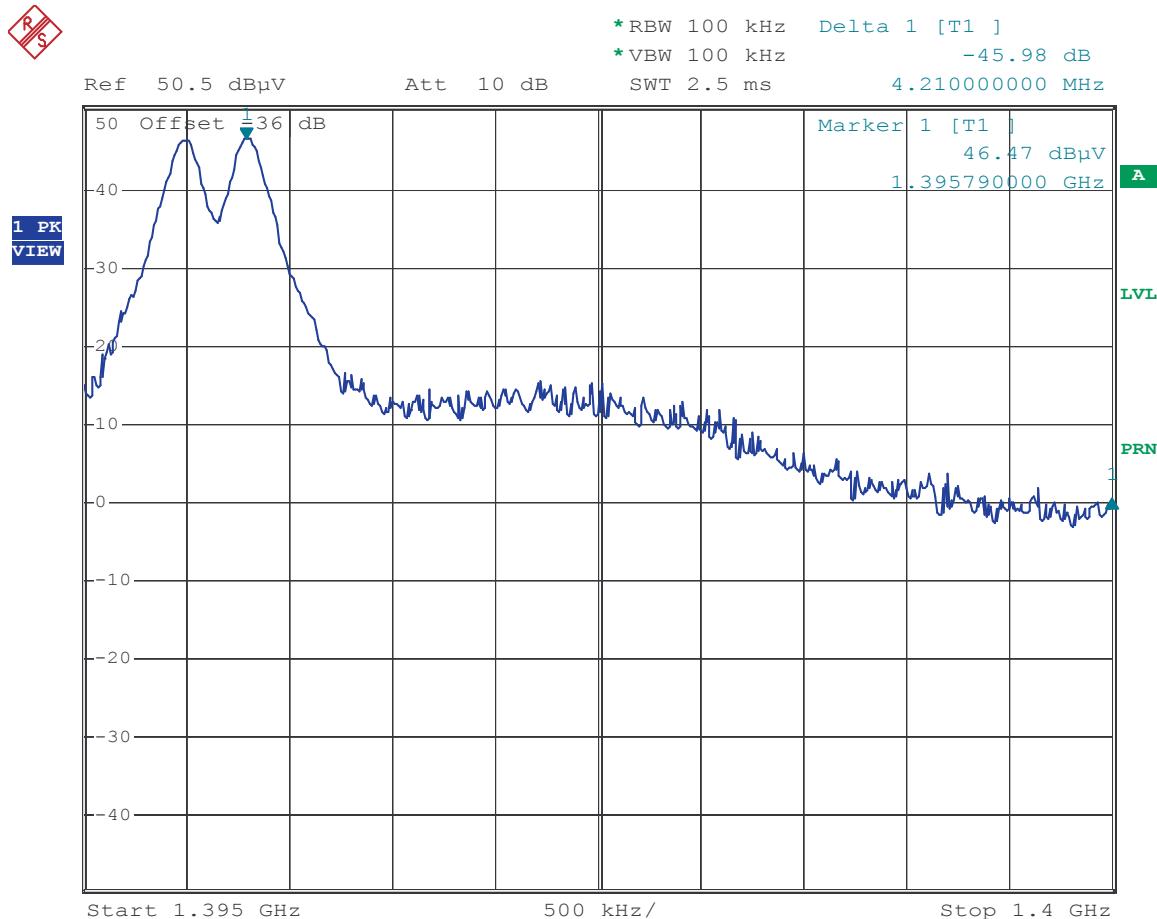


Comment: Ch4 X-Unit  
 Date: 17.MAR.2006 00:23:28

**Plot 5.3.c**

Date of Test: March 17 to 23, 2006

FCC ID: S8IWPMS

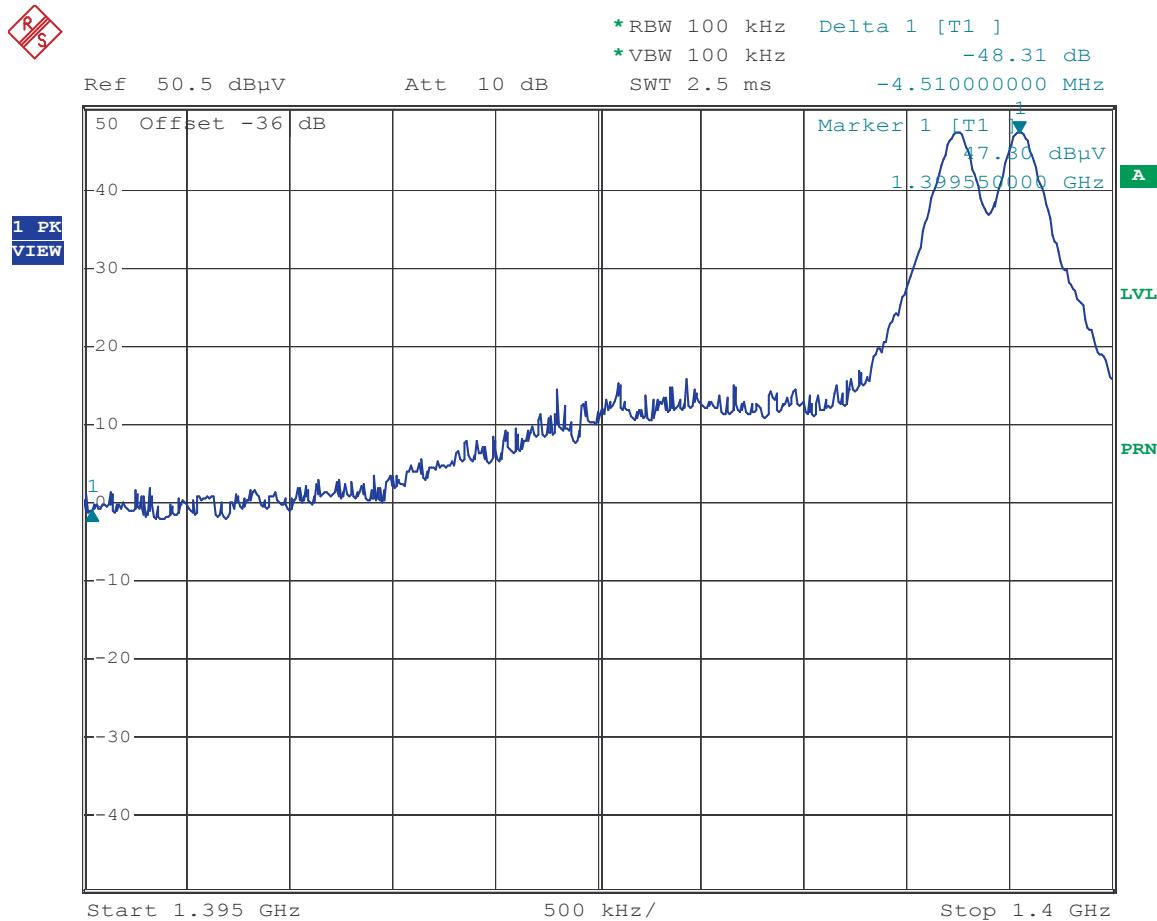


Comment: Ch4 X-Unit  
 Date: 17.MAR.2006 00:22:07

**Plot 5.3.d**

Date of Test: March 17 to 23, 2006

FCC ID: S8IWPMS

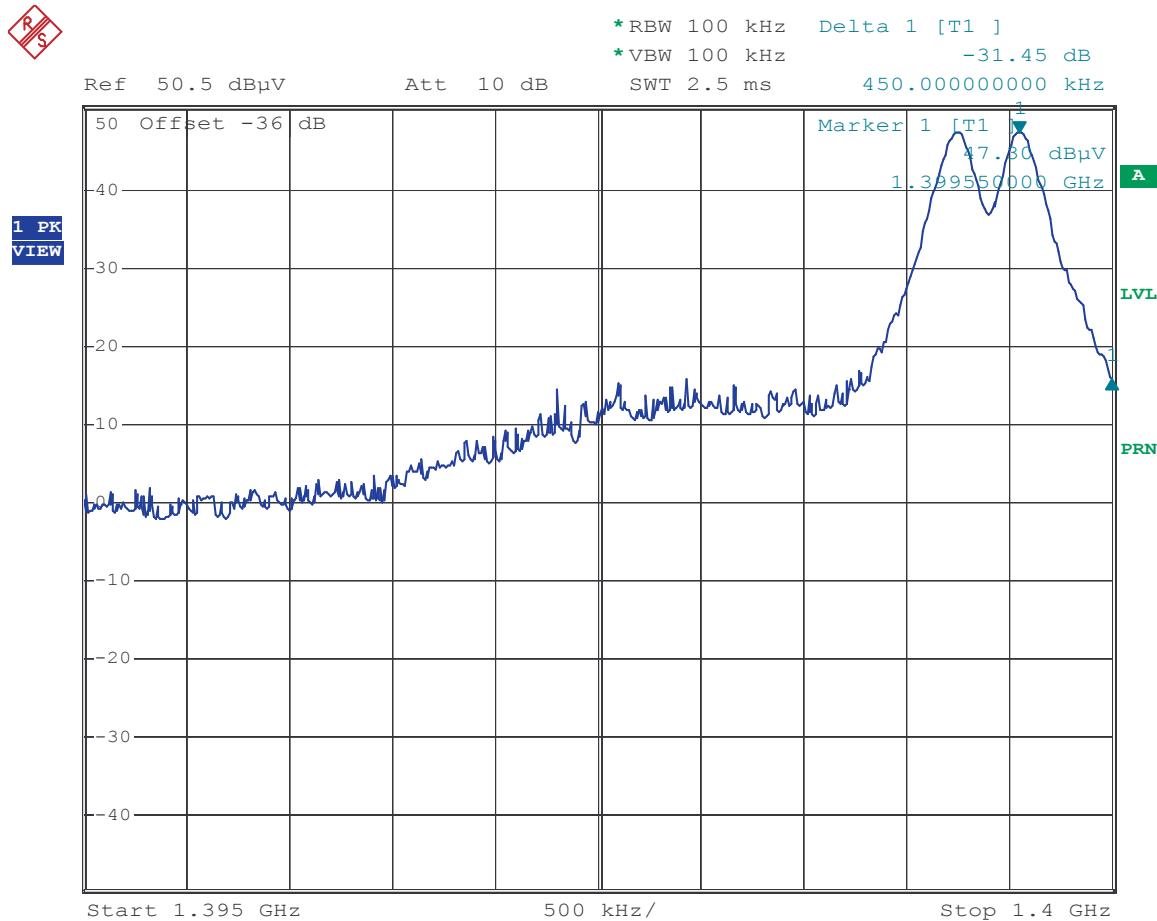


Comment: Ch4 X-Unit  
 Date: 17.MAR.2006 00:18:41

Plot 5.3.e

Date of Test: March 17 to 23, 2006

FCC ID: S8IWPMS

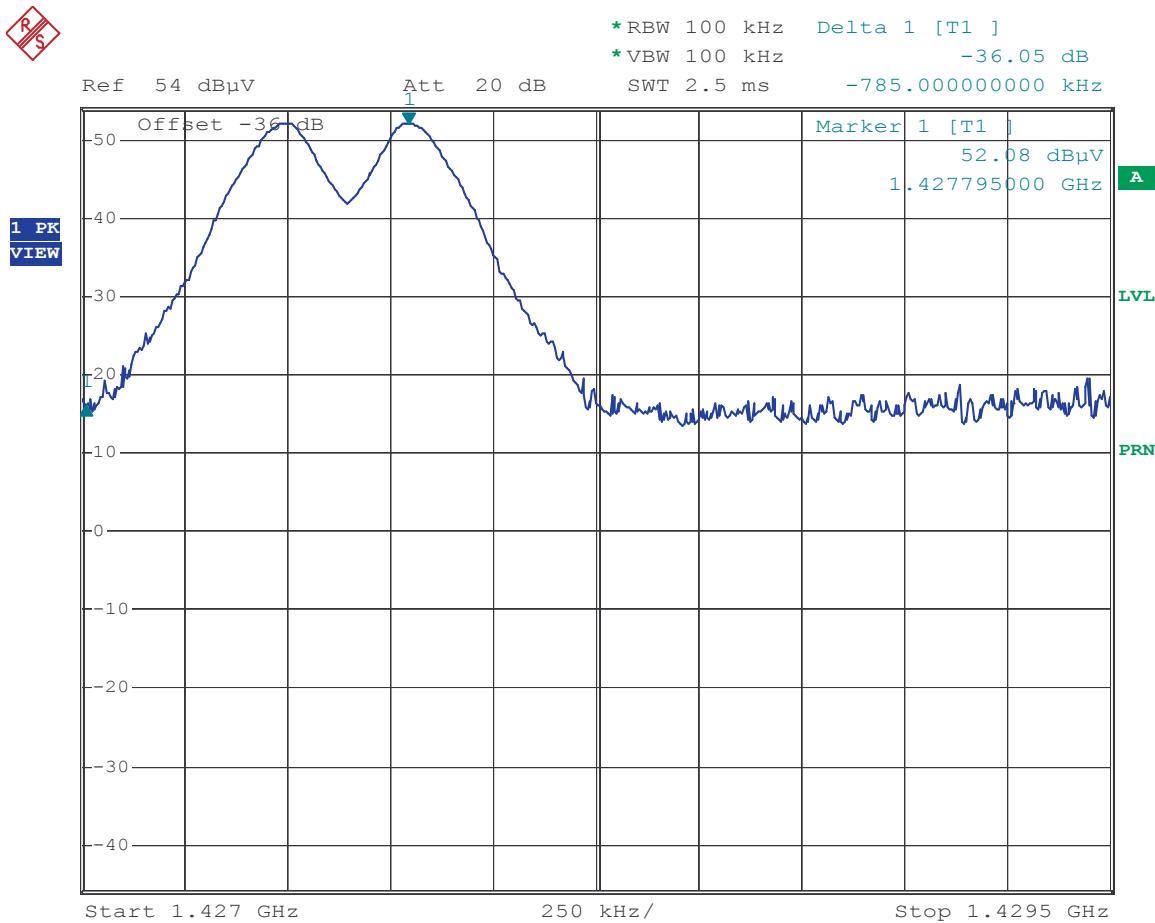


Comment: Ch4 X-Unit  
 Date: 17.MAR.2006 00:20:06

Plot 5.3.f

Date of Test: March 17 to 23, 2006

FCC ID: S8IWPMS

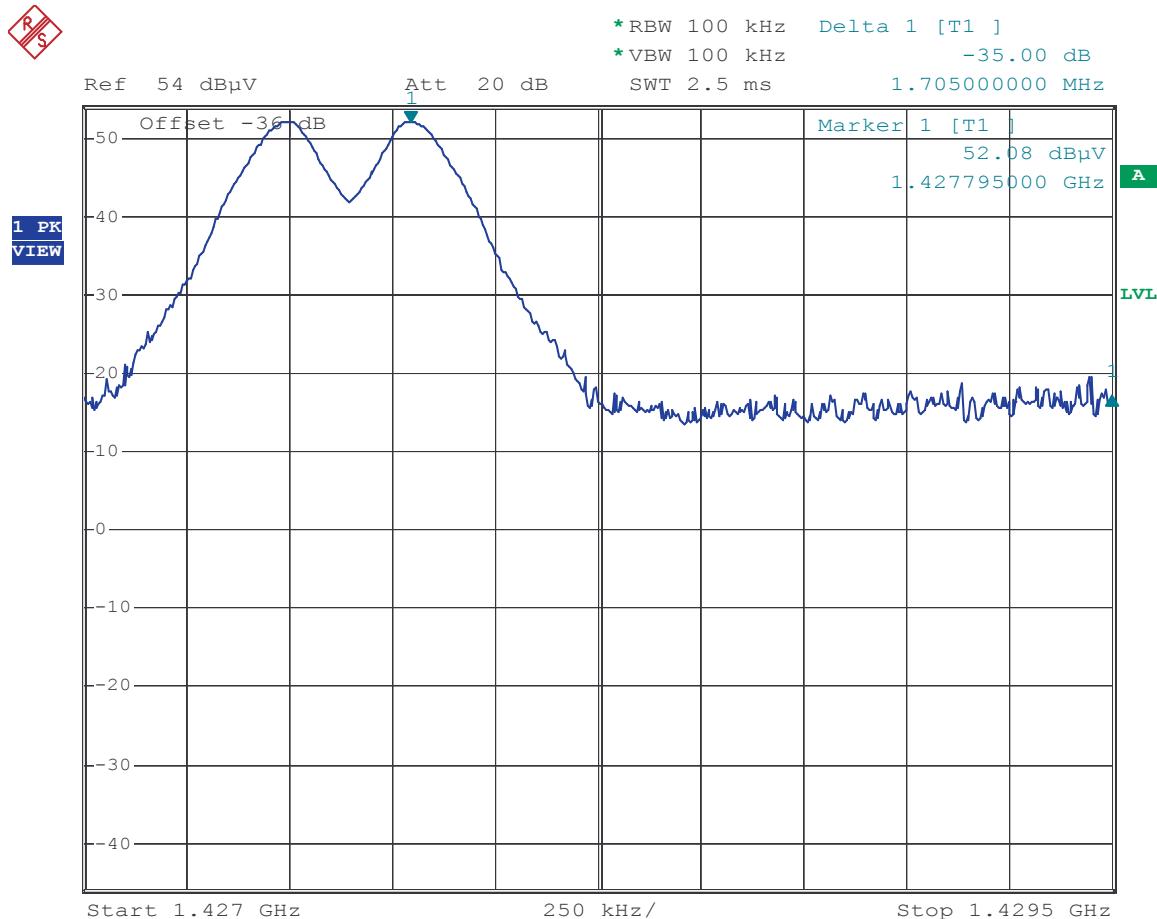


Comment: Ch5 X-Unit  
 Date: 17.MAR.2006 00:26:51

**Plot 5.3.g**

Date of Test: March 17 to 23, 2006

FCC ID: S8IWPMS

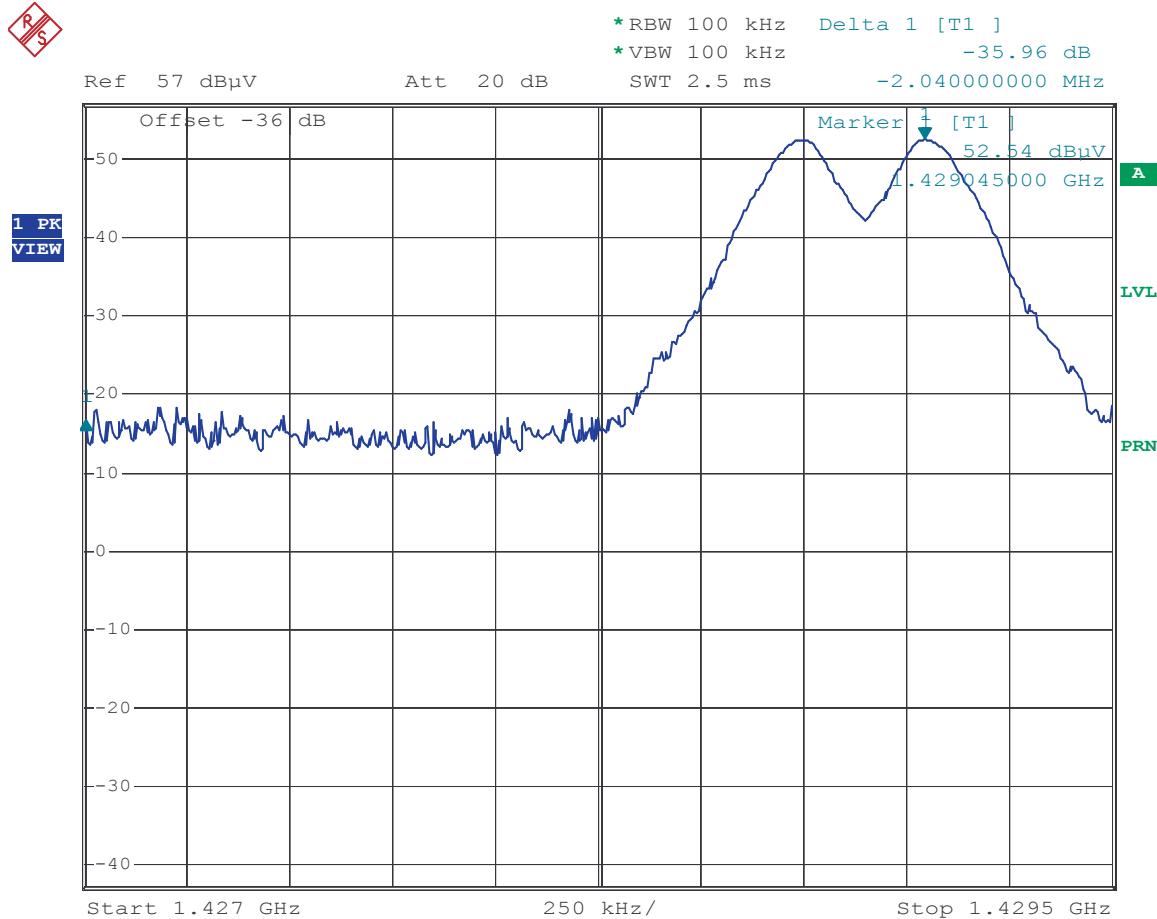


Comment: Ch5 X-Unit  
 Date: 17.MAR.2006 00:28:23

Plot 5.3.h

Date of Test: March 17 to 23, 2006

FCC ID: S8IWPMS

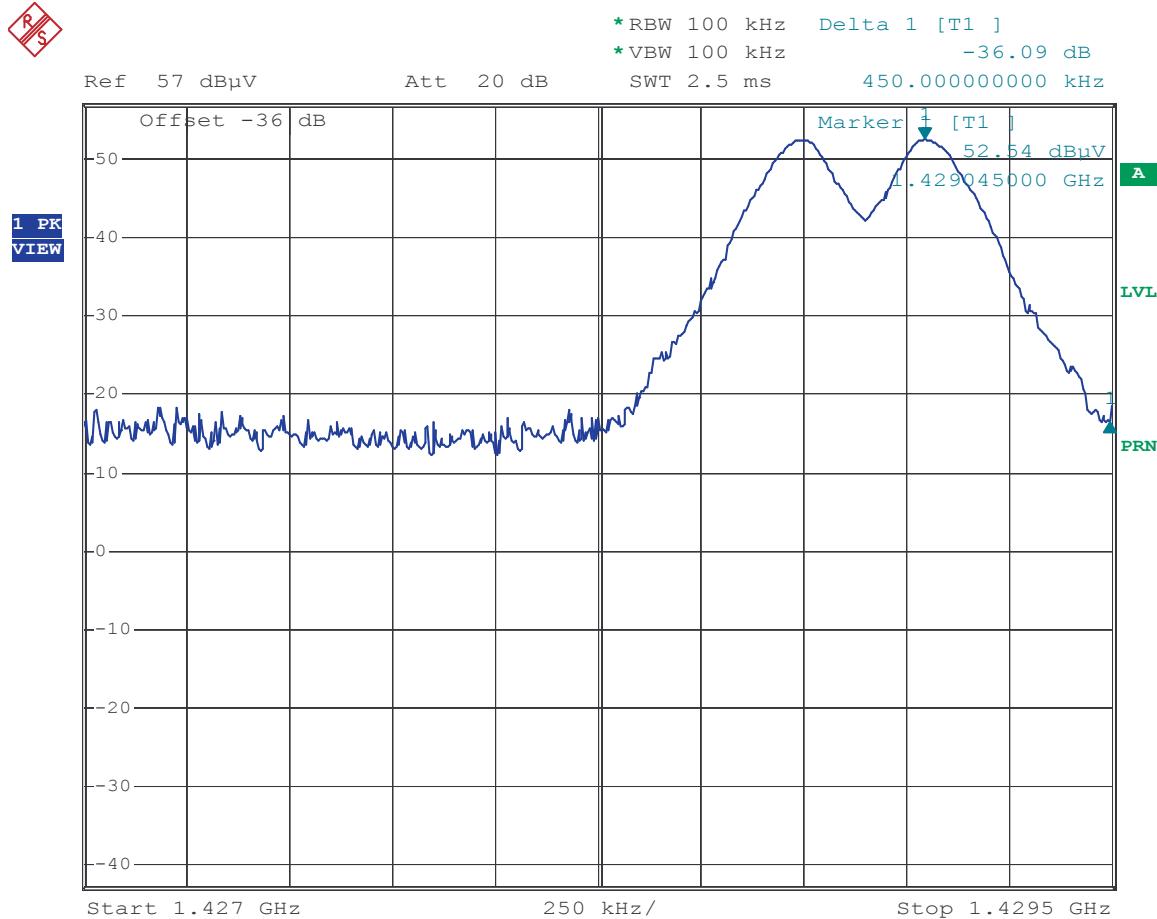


Comment: Ch6 X-Unit  
 Date: 17.MAR.2006 00:34:11

**Plot 5.3.i**

Date of Test: March 17 to 23, 2006

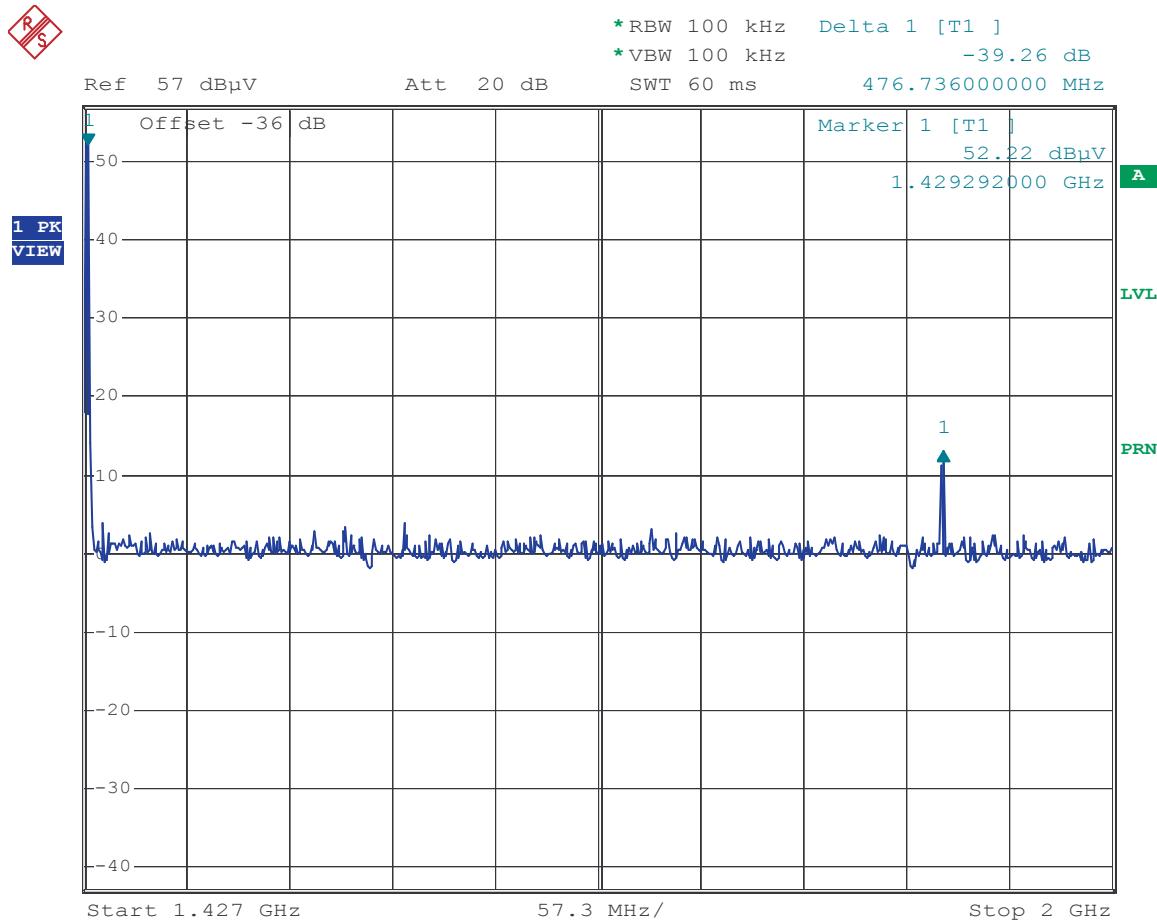
FCC ID: S8IWPMS



**Plot 5.3.j**

Date of Test: March 17 to 23, 2006

FCC ID: S8IWPMS

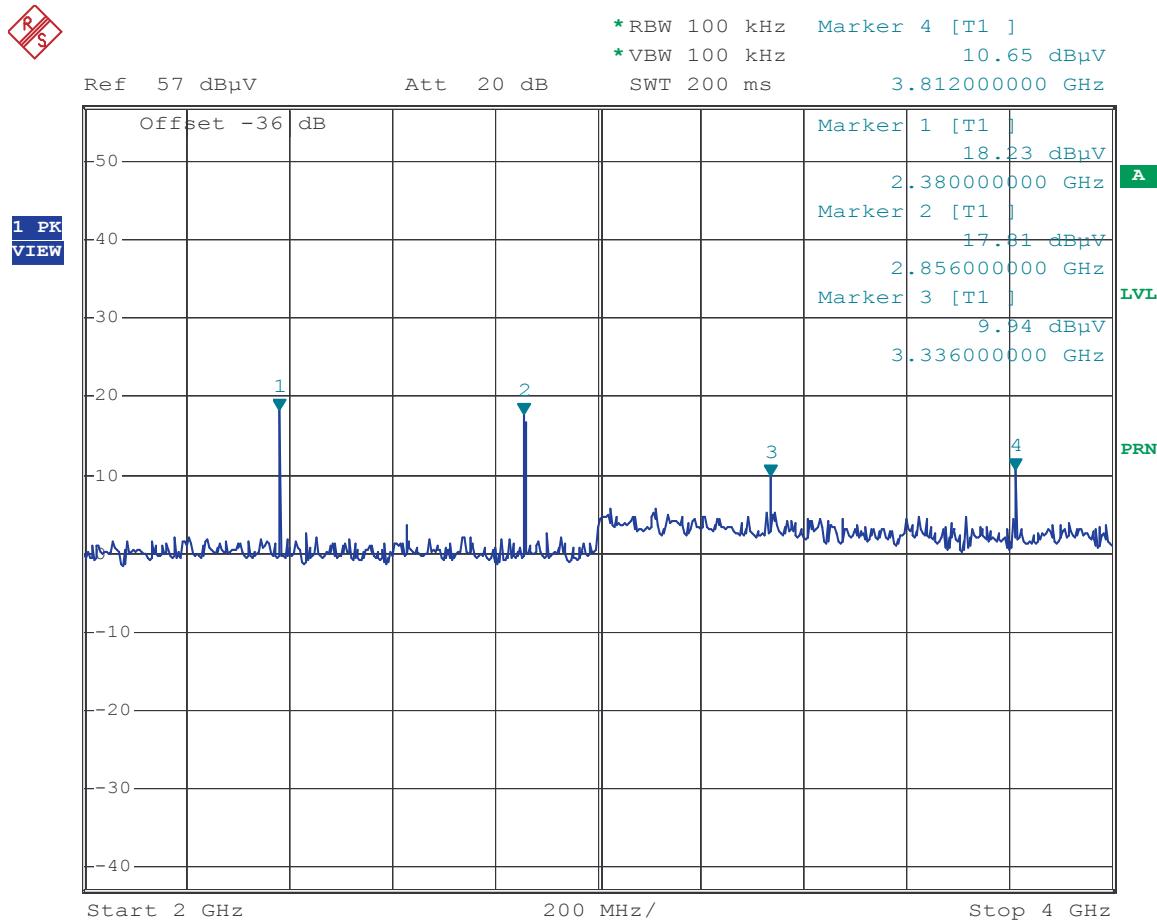


Comment: X-Unit, 1427-2000  
 Date: 17.MAR.2006 00:42:39

**Plot 5.3.k**

Date of Test: March 17 to 23, 2006

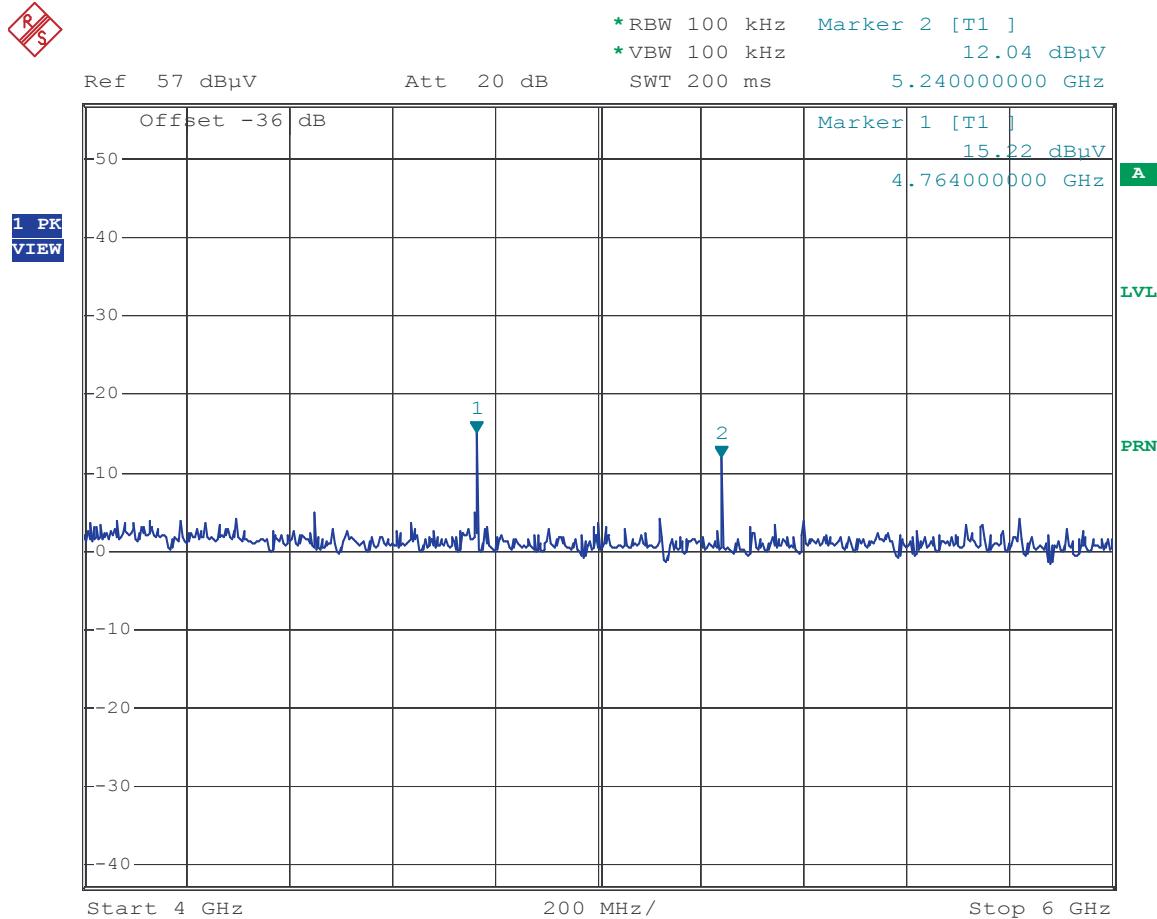
FCC ID: S8IWPMS



Comment: X-Unit, 2000-4000  
 Date: 17.MAR.2006 00:46:57

Plot 5.3.l

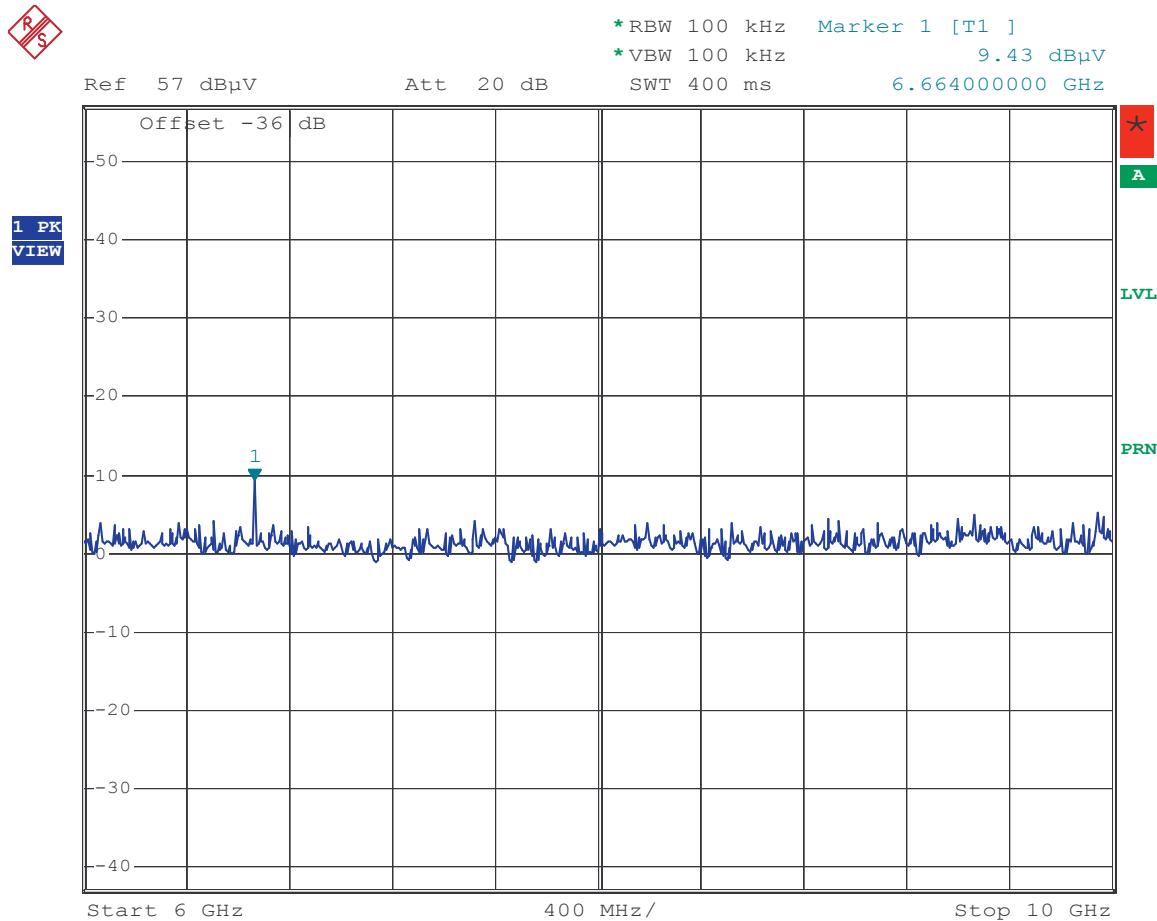
Date of Test: March 17 to 23, 2006

**FCC ID: S8IWPMS**

Comment: X-Unit, 4000-6000  
Date: 17.MAR.2006 00:53:03

**Plot 5.3.m**

Date of Test: March 17 to 23, 2006

**FCC ID: S8IWPMS**

Comment: X-Unit, 6000-10000 MHz  
Date: 17.MAR.2006 00:56:01

**Plot 5.3.n**

Date of Test: March 17 to 23, 2006

**FCC ID: S8IWPMS****6.4 Radiated Emission Data****Standard:** FCC Part 95.1115(b)

Measurement Uncertainty: 3.92dB

**Company:** Edwards Lifesciences, LLC

Temperature: 24°C

**Job No.** 3092673

Relative Humidity: 49 %

**Model Name:** X Unit**Mode:** TransmittingChannel 1

Frequency	Vertical level	Horizontal level	D.C.F.	Limit	Margin
MHz	(dBuV/m)	(dBuV/m)	dB	(dBuV/m)	(dB)
189.4	18.2	27.2	0	43.5	-16.3
190.5	19.1	29.0	0	43.5	-14.5
195.5	20.3	29.5	0	43.5	-14.0
196.9	21.6	32.0	0	43.5	-11.5
198.1	21.4	31.4	0	43.5	-12.1
204.3	19.7	28.8	0	43.5	-14.7
225.7	20.5	29.2	0	43.5	-14.3
465.3	40.5	41.7	0	46.0	-4.3

Channel 6

Frequency	Vertical level	Horizontal level	D.C.F.	Limit	Margin
MHz	(dBuV/m)	(dBuV/m)	dB	(dBuV/m)	(dB)
1905.500	24.5	28.5	0	54.0	-25.5
2381.680	38.2	42.3	0	54.0	-11.7
3334.000	24.0	26.7	0	54.0	-27.3
3810.160	27.7	30.7	0	54.0	-23.3
4764.000	26.9	23.3	0	54.0	-27.1
5240.000	32.6	28.9	0	54.0	-21.4
6666.900	25.8	26.1	0	54.0	-27.9

**Notes:**

- a) The field strength shown in the table for frequency below 1 GHz included Antenna factor, Cable loss and Pre-amplifier Gain (if applicable).
- b) The field strength shown in the table for frequency above 1 GHz included Antenna factor, Cable loss, Average factor (-26.4) and Pre-amplifier Gain (if applicable).
- c) For frequencies below 1000 MHz the, above limits are based on quasi-peak limits.

Date of Test: March 17 to 23, 2006

**FCC ID: S8IWPMS**

- d) For frequencies above 1000 MHz the, above limits are based on average limits.
- e) Negative signs (-) in Margin column signify levels below the limits.
- f) Analyzer setting:       $\text{RBW} \geq 1 \text{ MHz}$ ,  $\text{VBW} \geq 1 \text{ MHz}$ , for freq.  $> 1 \text{ GHz}$   
 $\text{RBW} \geq 100 \text{ kHz}$ ,  $\text{VBW} \geq 100 \text{ kHz}$ , for freq.  $< 1 \text{ GHz}$
- g) D.C.F: Distance Correction Factor

<b>Test Result</b>	<b>Passed with 4.3 dB margin at 465.3 MHz.</b>
--------------------	--

Date of Test: March 17 to 23, 2006

**FCC ID: S8IWPMS****7.0 Antenna Requirement****7.1 Test description**

Parameter:	FCC 15.203
Requirement:	FCC 15.203
Descriptions:	No antenna other than furnished by the responsible party shall be used with the device.

**6.2 Test Procedure**

None

**6.3 Test Result**

The device is considered to comply with the requirements by:

	<b>Description</b>
X	The transmitter uses a permanently connected antennas.
	The antenna is affixed to the EUT using a unique connector which allows for replacement of a broken antenna, but does NOT use a standard antenna jack or electrical connector.

Date of Test: March 17 to 23, 2006

**FCC ID: S8IWPMS****8.0 Occupied Bandwidth****8.1 Test description**

Requirement:	FCC §2.1049
Emission Bandwidth:	20 dB

**8.2 Test Procedure**

The measurement antenna was positioned at distance 3 m from the transmitter.  
Span = approximately 2 to 3 times of the 20 dB bandwidth, centered on the channel.  
RBW  $\geq$  1% of the 20 dB bandwidth.  
The bandwidth is measured at the 20 dB RF output.

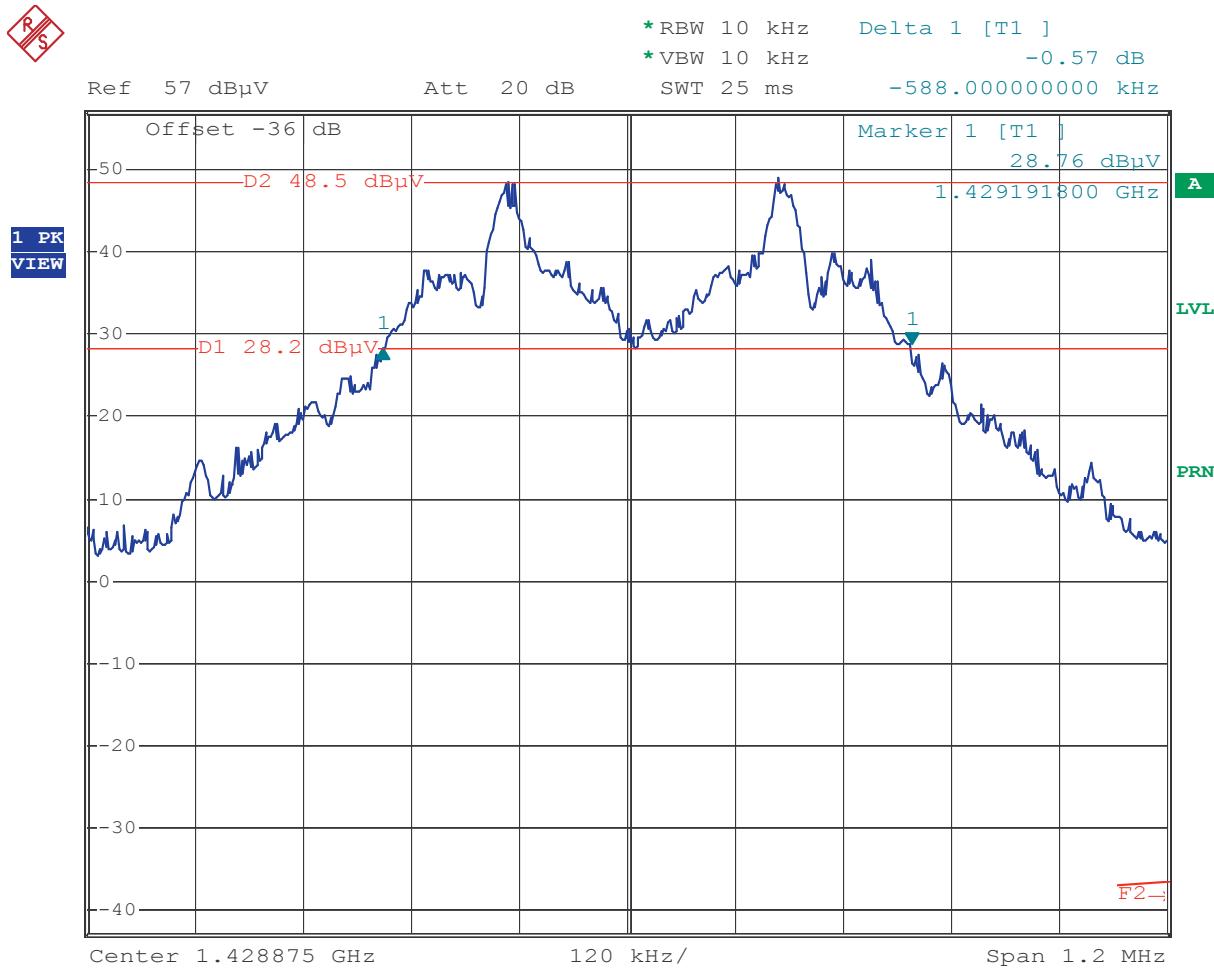
**8.3 Test Results**

Please see next page for the occupied bandwidth plot:

Test Result:	The Occupied Bandwidth is 588 kHz
--------------	-----------------------------------

Date of Test: March 17 to 23, 2006

FCC ID: S8IWPMS



Comment: X-Unit, Occupied BW  
 Date: 17.MAR.2006 01:13:45

Date of Test: March 17 to 23, 2006

**FCC ID: S8IWPMS****9.0 RF Safety****9.1 RF Exposure Evaluation**

Parameter:	FCC 95.1125
Requirement:	FCC 2.1093, 1.1307(b)(2)
Descriptions:	This "WMTS device can be classified as "Portable" and subject for routine environmental evaluation.

**9.2 Test Procedure**

None

**9.3 Test Result**

The device is considered to comply with the requirements by:

	<b>Description</b>
X	<p><u>Limit for general population:</u> 1.6 mW/g</p> <p><math>EIRP = E - 95.3 = 70.7 \text{ dB}\mu\text{V} - 95.3 = -24.6 \text{ dBm} \rightarrow 0.002 \text{ mW}</math></p> <p>The maximum possible SAR value in 1 g sample resulting from this power would be 0.002 mW/g. Compare to SAR limit 1.6 mW/g</p>
	<p><u>Conclusion:</u></p> <p>This is sufficiently below the limit to assure compliance without further evaluation.</p>

Date of Test: March 17 to 23, 2006

**FCC ID: S8IWPMS****10.0 TEST EQUIPMENT**

Measurement equipment used for emission compliance testing utilized the equipment on the following list:

**Receivers / Spectrum Analyzers / Pre amp**

DESCRIPTION	SERIAL NO.	LAST CAL DATE	CAL DUE	TICK IF USED
HP 8546A Receiver RF Section	3549A00261	11/16/05	11/16/06	X
HP 85460A RF Filter Section	3448A00265	11/16/05	11/16/06	X
Tile Software	Rev. 3.0 G	N/A	N/A	X
R & S FSP40 Spectrum Analyzer	100027	2/21/06	2/21/07	X
Agilent 8447D RF Pre Amplifier	2944A10141	1/27/06	1/27/07	X
HP 8449B RF Pre Amplifier	300801168	1/27/06	1/27/07	X

**Antennas**

DESCRIPTION	SERIAL NO.	LAST CAL DATE	CAL DUE	TICK IF USED
AH Systems SAS-510-4 Log Periodic	156	01/17/06	01/17/07	X
ETS LIndgren Biconical Antenna 3110B	56996	05/13/05	05/13/06	X
Com-Power AL-100 Logperiodic Antenna	16055	05/02/05	05/02/06	
ETS Lindgren 3115 Horn Antenna	00031626	03/09/06	03/09/07	X

**Artificial Mains Networks/Absorbing Clamps**

DESCRIPTION	SERIAL NO.	LAST CAL DATE	CAL DUE	TICK IF USED
EMCO 3825/2 25A LISN	2527	7/20/05	07/20/06	
FCC LISN 50 Amp 5 $\mu$ H	9827	02/07/05	02/07/06	

Date of Test: March 17 to 23, 2006

**FCC ID: S8IWPMS****11.0 Document History**

<b>Revision/ Job Number</b>	<b>Writer Initials</b>	<b>Date</b>	<b>Change</b>
3092673	SM	September 12, 2005	Original document
3092673 Rev.1	SM	August 17, 2006	Sections 1 and 9